



Title XVI Water Reclamation and Reuse Grants - 2019

California

Padre Dam Municipal Water District, East County Advanced Water Purification Facilities Performed Chloramines Research to Ensure California Toxics Rule Compliance

Reclamation Funding: \$45,150 Total Project Cost: \$180,603

Padre Dam Municipal Water District, in San Diego County, California, will partner with regional partners to evaluate the use of preformed chloramines to both carry a chloramine residual to prevent membrane fouling and to meet the California Toxics Rule requirements for discharge to Lake Jennings. Pretreating the advanced water purification facility (AWPF) feed flow with chloramine via the industry-standard method would result in the generation of unacceptable levels of trihalomethanes. The research involves modification of the District's existing demonstration AWPF for the preformed chloramines method and one year of monitoring to ensure trihalomethane concentrations are below detection limits. The results of the field research will feed directly into the design and construction of the new full-scale AWPF.

City of San Diego, Demonstrating Innovative Control Strategies for Reverse Osmosis Membrane Degradation and Preserving Water Quality in Potable Reuse Application with Optimized Chloramination Strategies

Reclamation Funding: \$155,113 Total Project Cost: \$620,451

The City of San Diego in southern California will research the impacts of elevated bromide levels on reverse osmosis (RO) membrane oxidation and compliance with the California Toxics Rule. The region has seen increased bromide levels due to an increase in seawater desalination supplies and an increase in imported water supplies from the State Water Project rather than the Colorado River. The elevated bromide levels are expected to increase the rate of oxidation of RO membranes and increase formation of brominated disinfection byproducts. The research will evaluate three control strategies that ultimately could reduce the anticipated RO membrane replacement frequency - lowering operation and maintenance costs. The results of the research will be directly applied to the Pure Water San Diego Project, which will be the first surface water augmentation potable reuse project in California upon completion.

The Metropolitan Water District of Southern California, Demonstration of Pathogen Removal through an Alternative Treatment Technology to Treat Non-Nitrified Secondary Effluent for Potable Reuse

Reclamation Funding: \$750,000 Total Project Cost: \$3,987,785

The Metropolitan Water District of Southern California and the Sanitation Districts of Los Angeles County are exploring the potential of a large-scale Regional Recycled Water Program to beneficially reuse water currently discharged to the Pacific Ocean. The facility would use a treatment train comprised of a membrane bioreactor (MBR) process, reverse osmosis (RO) and advanced oxidation process driven with ultraviolet light (UV). However, there are no operating facilities using an MBR-RO-UV treatment train for indirect potable reuse and a primary challenge for implementation is the current lack of pathogen reduction credits for MBRs. This project will assess pathogen removal by the MBR process to gain pathogen reduction credits and technology acceptance from California regulatory authorities for MBR as a key pathogen barrier in a potable reuse treatment train. The project will demonstrate that the advanced water treatment processes can achieve the water quality and operational goals necessary to develop a regulatory strategy to streamline incorporating MBRs into potable reuse applications in California, ultimately facilitating safe and cost-effective expansion of recycled water.

Oklahoma

City of Norman, Lake Thunderbird Water Reuse - Field Research Project for Inland Indirect Potable Reuse

Reclamation Funding: \$700,109 Total Project Cost: \$2,800,435

The City of Norman, through the Norman Utilities Authority, seeks to advance the first indirect potable reuse (IPR) project in Oklahoma by augmenting a Bureau of Reclamation reservoir (Lake Thunderbird) with highly treated effluent from the City. The research will be done in collaboration with state regulators and entails pilot-scale testing to evaluate the effectiveness of various advanced treatment processes at meeting target effluent water quality limits in accordance with newly-released IPR requirements in Oklahoma. The research also will determine the suitability of these advanced processes for an inland IPR application without the use of high-pressure membranes such as nanofiltration or reverse osmosis. The results from this study could impact future potable reuse projects across the country by advancing a treatment strategy that does not generate a high-concentrate brine and eliminates challenges associated with its disposal.